

# Dynamic Simulation of Regional Sustainable Tourism Development System

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## Abstract

With the deterioration of the global ecological environment, economic development and environmental carrying capacity have become increasingly prominent issue of sustainable development has increasingly become a hot topic. According to the concept of sustainable development, to build sustainable development of tourism system includes tourism, population, society, resources and environment of the five sub-systems. On the basis of analysis of the internal sustainable development of tourism related internal systems and dynamic behavior of each element on the establishment of Sustainable Tourism system dynamics model of development. Using system dynamics modeling regional Tourism Sustainable Development was simulated by indicators for key elements of the regulation proposed tourism in Tibet should take into account environmental protection, infrastructure investments, professional training, tourism regulatory development, tourism enterprises and sustainable development model employees and other elements of the decision-making basis for regional tourism sustainable development and scientific management.

**Keywords:** *Military-Endurance-Solid-Sport-Beverage, Physical Training, Impact Indicators.*

## 1. Introduction

Sustainable development of tourism in the economic policy priorities, the environment, too commercial and other factors on the sustainable development of tourism poses a severe challenge to economic recession, environmental degradation, decline in social conflicts and travel satisfaction seriously restricting sustainable tourism development of. Integrated existing research, tourism sustainable development is primarily related to tourism, population, society, resources and environment, the five basic elements, therefore, can be considered the essence of sustainable development of tourism that is to promote tourism and population, society, resources, coordinated development side of the environment. Sustainable development of tourism between tourism, population, society, resources and environment by the interaction of a complex system interconnected posed. From the regional tourism system's internal mechanisms for sustainable development, microstructure start, analyze the system and rely on computer simulation techniques to analyze the

internal structure of research systems and their dynamic behavior characteristics.

## 2. Materials and Methods

### 2.1 Regional sustainable tourism development

Sustainability is a primitive species of human economy. It pre-industrial subsistence lifestyle unique sustainability by understanding the unique nature of consciousness to maintain, namely: the survival of plants and animals and their people have a spiritual connection; who is landscape (that nature) is part of nature rather than from the master. Along with the process of industrialization, the "original sustainability" era is over. Modern concepts of sustainability originated in the people of the forest, fisheries etc. renewable understanding of resource use, especially in understanding the formation of this concept played an important role in forest resource utilization. As human beings continue to deepen understanding of ecosystems, renewable resources in understanding the idea of eco-system, it creates a modern concept of sustainability, namely: the need to maintain the existing ecological situation of humanity in a certain level of benefits, including Human lives of future generations [1].

Regional sustainable development refers to economic, social, environmental and regional resources, coordination, both to meet the needs of the present without jeopardizing the needs of future generations to meet their own development capacity, which is consistent with the interests of the region's population without jeopardizing even the development of the global population benefits elsewhere. Meanwhile, the regional sustainable development can be emphasized on coordination relationships, intergenerational relations and inter-regional relations. Region is the sustainable development of research material entity, is all theory and space vehicle principles are applied.. Any one region, has decided to sustainable development of the five elements: the carrying capacity of the population, production capacity, buffering capacity of the environment, stable social skills and the ability to regulate the management of the area, they constitute a complex support system. That area is the

coordinated development of regional sustainable development of population, economy, society, resources and environment, which it is a highly complex, uncertainty, multi-level nature of the giant open system [2].

### 2.2 System dynamic analysis

With the development of tourism, the influx of large numbers of tourists, some impact on tourism to the environment, resources, and the normal order of life of residents, and this will, therefore residents travel to face more and more tourists will gradually produce reject, leading to the attitude of the tourism industry will become more indifferent, and ultimately affect the healthy development of the tourism industry.

At the same time, visitor spending will increase tourism income residents, for residents to provide more employment opportunities, which in turn will improve active participation of residents in tourism and draw more tourists to enter. After the increase of tourists, tourism revenue increased tourism economy in the national economy also increases, will attract more enterprises to enter the tourism industry, the prosperity of the tourism market. Tourism economic development will make the government more power to invest in the tourism industry, especially in tourism infrastructure construction, environmental protection, so as to optimize the local tourism environment and attract more tourists to the development of tourism, but also to attract more An increasing number of professional and technical personnel engaged in research and tourism discipline, so that the sustainable development of the tourism industry for more scientific decision-making [3].

The model out of the population according to the average person travel out of the calculation of the rate of the tourism industry, tourism practitioners for new population through the development of tourism on employment factor to measure tourism resource consumption calculated on the basis of tourism resources and the natural attrition rate per million tourism Income consumption of tourism resources, tourism resources, new year means new development of regional tourism resources depends on the rate of visitors to change the number of visitors, tourists change rate of five variables in the model number of travel companies decided to withdraw the decision on the tourism business life cycle. Is the reciprocal of the life cycle of the annual attrition rate of tourism enterprises tourism professional and technical personnel from New tourism professionals and tourism professionals determine the loss of tourism professional and technical personnel turnover rate in accordance with the retirement of specialized technical personnel, new expertise into tourism number of persons affected by tourism enterprises, tourism research funding and tourism revenue in GDP three variables affect tourism Innovation Index by the tourism

impact of tourism research funding and the number of professional and technical personnel .

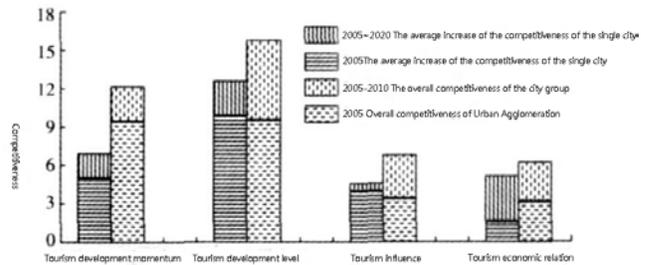


Fig. 1 Comparative analysis of tourism competitiveness between entire urban agglomeration and its inner cities.

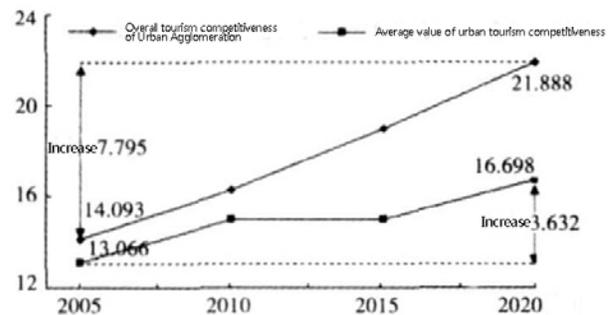


Fig. 2 Comparative analysis of tourism competitiveness between entire urban agglomeration and its inner cities .

Spatial boundaries of the system for regional, time of 2001 to 2030, a total of 30 years, the simulation step size is 1 year. In 2009 the base year for the simulation studies, whichever is the data for the baseline measures of the index in 2001 initial value of the data to 2001-2009 historical data as a basis for the determining. The results are analyzed as follows: Environmental investment ratio from 0.0034 up to 0.005, tourism enterprises life cycle consists of nine 45 years to 10 years, tourism research funding increased from 0.014 up to 0.02, tourism revenue funding ratio increased to 0.00002, tourism infrastructure investment ratio from. 0.031 up to 0.04 10,000 yuan of tourism revenue pollution emissions from one unit to reduce pollution 0.85 polluters 10,000 yuan of tourism revenue tourism resource consumption by one resource unit is reduced to 8 resource units, tourism industry personnel outflow rate from 0.18 down to 0.175. In this case, the 2030 data and the results of a variable compared to the magnitude of the change was + 9.09%, + 8.98%, more than 13.5%, more than 3.7% - 14.45%, +38.28 % and + 13.74%, and a comparison with the results, the results of the number two in the tourism business, tourism employed population, the number of visitors, tourism professionals and technical personnel continued to maintain a rapid growth, and more growth, and increase

the stock of pollution decreased significantly, decreasing trend in tourism resources stocks have a greater ease, residents travel awareness has been maintained at a high level [4].

### 3. The Evaluation of Sustainable Development of Regional Tourism

Sustainable development of regional tourism assessment is the premise of sustainable development from theory to operational phase. Regional Sustainable Tourism Development Evaluation time to reflect on the speed and sustainability of tourism trends, tourism in space reflect the overall layout and structure of sustainable development. Meanwhile, the evaluation index system of sustainable development, reflected in the number of scope for sustainable development of tourism, reflecting the structure of sustainable tourism development in terms of quality, reflected in the level of functionality and level of sustainable tourism development, and both describe, evaluate, interpretation, early warning and decision-making, and many other features and value. In general, the area of sustainable tourism development evaluation should follow the following basic principles [5].

The current interest can be able to obtain or achieve benefits in the near future; refers to the interests of long-term interests to get in the future. Calling attention to the long-term interest in the sustainable development of tourism evaluation, a very important issue is the rational use of tourism resources and the protection of the environment of tourism, modern people can't because of their own development and demand immediate interests to the detriment of future generations to meet their needs and environment; on the other hand, we can't blindly pursue the long-term interests of the neglect and disregard of current interest, with emphasis on the protection of resources and the environment in development. Eco-efficiency refers to the natural ecological system to obtain the efficiency of material and energy exchange to maintain ecological balance and improve the ecological environment. Eco-efficiency is naturally formed the basis of objective economic, ecological and economic benefits it is important to improve the social environment and external conditions. Under normal circumstances, when the two come into conflict, we must not be at the expense of ecological benefits in exchange for temporary, local economic benefits.

Because of the large differences in the level difference between the natural conditions of the region, history, cultural background and geographic location, and a regional social and economic development, development among regions caused by the imbalance, that regional differences. Problems in the implementation of the regional tourism sustainable development encountered not

the same, so the regional primary objective of sustainable development, the evaluation is not the same focus, the right method to evaluate or index system and index weight but also because of regional differences and different. Static evaluation refers to the evaluation of the status quo, the main analysis of the current status of the system structure, achieved a measure of the overall system functionality and benefit level, static evaluation can reflect the reality of the production capacity and level of the system. Dynamic Evaluation mainly succession rule structure, function and efficiency in all aspects of the system prompt to grasp the laws governing the operation of sustainable tourism development system for effective control system. Static evaluation and dynamic evaluation of the combination, both from the aspect of sustainable tourism development system comprehensively reflect the whole picture [6].

### 4. Key technologies

Excellent tourism can achieve transformation must rely on the smart of the new technological revolution, in which networking technology, cloud technology, sensor technology, RF technology, network technology, intelligent information processing technology, the most important calculations. These techniques become an excellent tourist city smart transformation vector, urban operations and management tools [7]. Fig.3 shows the measures to prevent the progressive collapse of the structure.

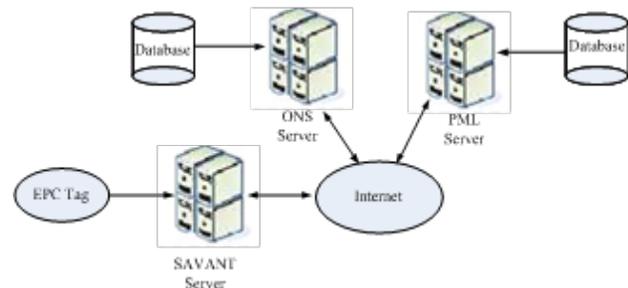


Fig. 3 The schematic diagram of system components.

Things sensing technology is through information sensing devices, according to the agreed protocol, to any items connected to the Internet, information exchange and communication in order to achieve intelligent identification, positioning, tracking, monitoring and management of a network. From a technical point of view, things are sensor networks. Sensing technology is about to obtain information from the source and nature of processing (transformation) and the identification of a multidisciplinary modern science and engineering, which involves sensors, planning and design of information processing and recognition, development system construction, testing, application and evaluation of improvement activities. Under the premise to ensure security of information, on the one hand to maximize the tourist information resource utilization, on the other hand to facilitate the exchange between the main tourist market and resource sharing model [8].

Radio Frequency Identification technology is a non-contact automatic identification technology, which can achieve a combination of electromagnetic signals in the non-contact transmission of information objects, RFID system usually consists of RFID tags, antennas, readers, and background processing system components. RFID systems general workflow is: a certain frequency emitted by the reader to the RF signal through the antenna, when the electronic tag reader antenna into the work area is activated, the tag information will be sent through the pre-built antenna.

## 5. Conclusions

Dynamic Modeling System is an important method for complex systems research in the field of socio-economic, sustainable development of tourism as the research object, the number of links between key elements of analysis between internal systems, the establishment of the system of power on Sustainable Development theoretical models. The model is intuitive description and explanation on the internal structure and the development of sustainable tourism in the region as a management study to optimize the pattern of regional tourism sustainable development study concluded that: environmental protection, investment, professional training, development and implementation of tourism enterprises, employees and other elements of travel regulations for sustainable tourism development in the region has a very significant role in promoting the scientific development of indicators system for sustainable development of tourism on the implementation of regional tourism can sustainable development strategy is important; establish evaluation system is an important element in promoting the sustainable development of tourism. Using system dynamics modeling regional Tourism Sustainable Development was simulated by indicators for key elements of the regulation proposed tourism in Tibet should take into account environmental protection, infrastructure investments, professional training, tourism regulatory development, tourism enterprises and sustainable development model employees and other elements of the decision-making basis for regional tourism sustainable development and scientific management.

## Acknowledgments

The authors wish to thank the helpful comments and suggestions from my teachers and colleagues in intelligent detection and control lab of HIT at Weihai. And also thank Beijing Up-tech to provide part hardware. This work is supported by the study fund of HIT at Weihai (No.IMVQ02020003 and IMJQ21080002).

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